Remarks/Arguments:

The Applicants appreciate the Examiner's acknowledgement that the previous prior art rejection has been overcome and also appreciate the Examiner's explanation thereof. Claims 1-13 and 15-52 now stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilkinson et al. (EP 0 736 921) in view of Petrow et al. (U.S. Patent No. 3,922,512). For the reasons set forth below, the Applicants submit that the claims are patentable over these references.

The present invention as recited in claim 1 relates to an electrically conducting gas diffusion substrate comprising an electrically conducting porous structure and a first catalytic component, wherein the first catalytic component comprises a first catalyst directly supported on an electrically non-conducting support. Claim 2 specifies that the first catalyst is a gas-phase catalyst. Claims 15 and 16 further specify, respectively, that a second catalytic component is included and that such a catalytic component is an electrocatalyst.

Wilkinson et al. discloses an electrode comprising two catalysts, the first being a gas phase catalyst and the second being an electrocatalyst. It is disclosed that the catalysts may be supported on carbon, but there is no disclosure of the catalysts, in particular the gas phase catalyst, being supported on an electrically non-conducting substrate. As the Office Action summarizes, "Wilkinson et al. does not explicitly teach the ... feature of a gas diffusion substrate for a fuel cell comprising a porous electrode having a catalyst directly supported on an electrically non-conductive support." Office Action, page 3, lines 7-9.

To satisfy this missing limitation, the rejection relies on Petrow et al. Petrow et al. is directed to a method for preparing a complex platinum sulfite acid; a sol is prepared and this is then used to prepare catalytic surfaces for electrodes and other uses. Significant detail is provided in Petrow et al. regarding the form of the catalytic metal *per se* (i.e., platinum) and not how or to what the platinum is supported on. See col. 1, line 56 through col. 4, line 40.

The Office Action concludes that is would have been obvious to modify the disclosure of Wilkinson et al. by employing a catalyst directly supported on an electrically non-conductive support because the "motivation for such a modification is to greatly improve catalytic efficiency

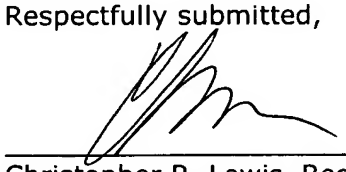
tenfold." See Office Action, page 3, lines 13 and 14 *citing* Petrow et al. at col. 5, lines 15 and 35-42. This is not an accurate reading of Petrow et al (col 5, lines 12 and 13). The conclusions made at the cited portion of column 5 were made in reference to results of tests of the material described beginning at column 4, line 44. The materials compared with one another were (1) a platinum sol of Petrow et al. supported on carbon black (col. 4, lines 44-46) and (2) a conventional platinum of nominal surface area also supported on the same carbon substrate. Thus, both materials used carbon, an electrically *conducting* support, as the support; the difference in the materials tested was the form of the catalytic metal, platinum, consistent with the teaching of Petrow et al.

While the material of Petrow et al. did show, in essence, a tenfold improvement in catalytic efficiency, this result would not have motivated one of ordinary skill in the art to directly support a first catalytic component on an electrically non-conducting support because both supports were carbon black, an electrically conducting material. At best, this teaching would have motivated one of ordinary skill in the art to select the particular form of platinum indicated by Petrow et al. to be novel. Moreover, in this portion of Petrow et al., the catalyst is acting as an electrocatalyst, not as a gas phase catalyst as recited in claim 2.

The Office Action also cites to col. 5, line 54 et seq. Although platinum is applied to a non-conductive substrate, alumina, in this portion of Petrow et al., once again the sole difference in the materials tested and compared is the form of the catalytic metal, platinum. See col. 5, line 55-63 versus col. 5, line 67 and 68. Thus, this portion of Petrow would not have motivated one of ordinary skill in the art to directly support platinum on an electrically non-conducting support but, at best, to select the particular form of platinum espoused by Petrow et al. Moreover, there is no mention of this catalyst being suitable for use as a gas phase catalyst in a gas diffusion substrate, as called for by claim 2.

Accordingly, the applicants contend that the claims are patentable because nothing in Petrow et al. would have motivated the skilled person to modify the disclosure of Wilkinson et al. to use an electrically non-conducting support as the support for the gas phase catalyst in a gas diffusion substrate. Therefore, the applicants respectfully request reconsideration and allowance of claims 1-13 and 15-52.

Respectfully submitted,



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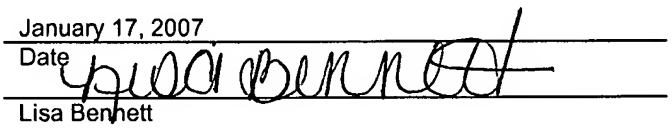

Lisa Bennett

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